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(54) Abstract Title

SIM card locking in a portable telephone

(57) A rectangular SIM hole 80 is formed to a predetermined depth in the rear cover of a portable telephone. Mounting guide rails 54 protrude from sides of the SIM hole towards the centre of the SIM hole. A printed circuit board (PCB) 70 is disposed under the SIM hole. A SIM block 60 is attached on the PCB 70 and an inclined portion 51 of a latch is positioned on the mounting guide rail-free side of the SIM hole, extends from one side of the rear cover, is inclined towards the SIM hole and has an inward protrusion 55 on its free end.

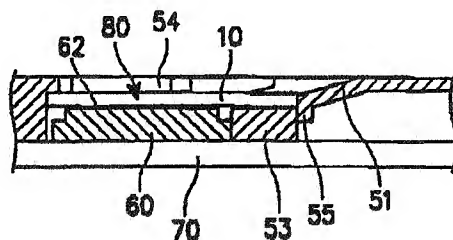


FIG. 7

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

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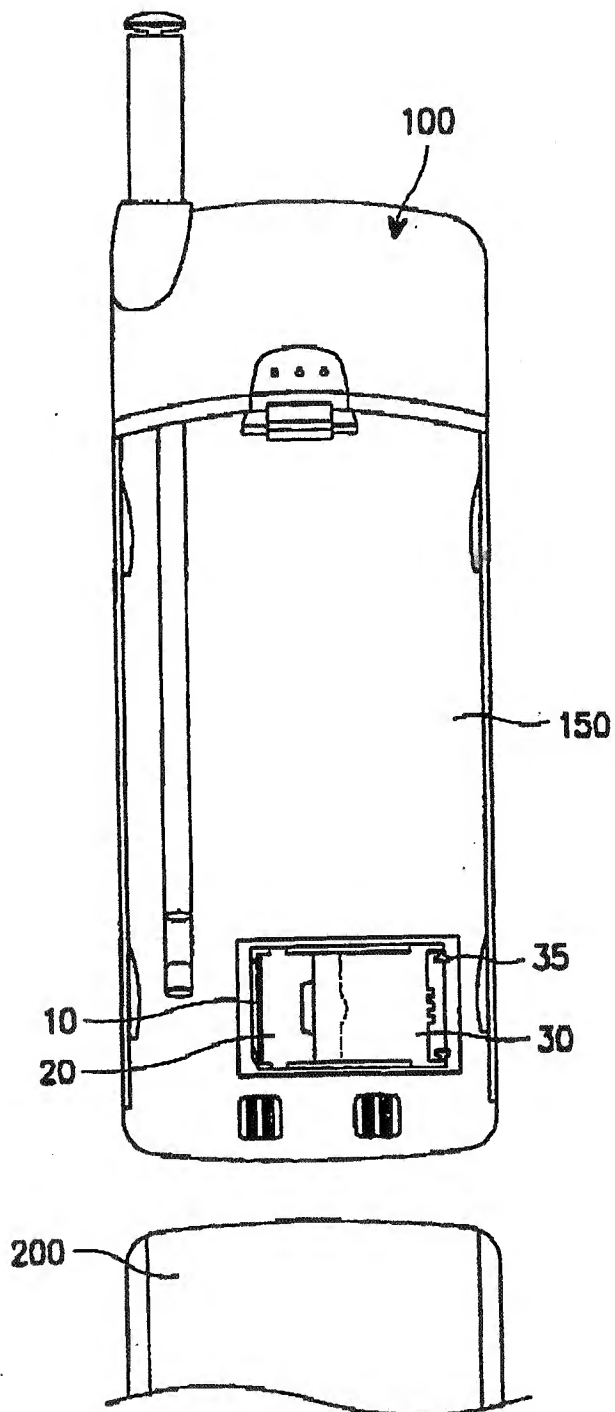


FIG. 1

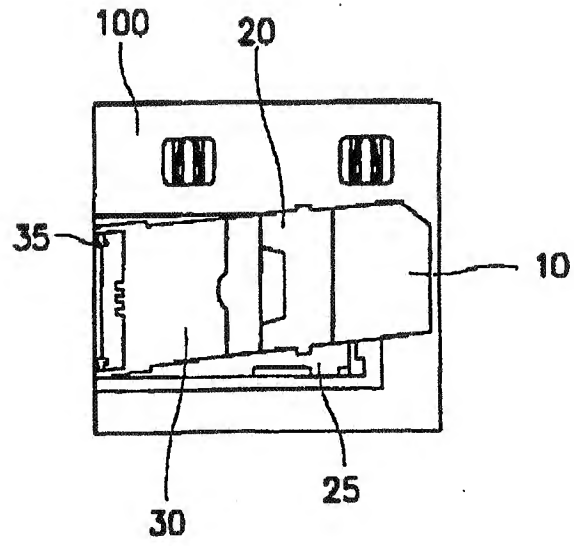


FIG. 2

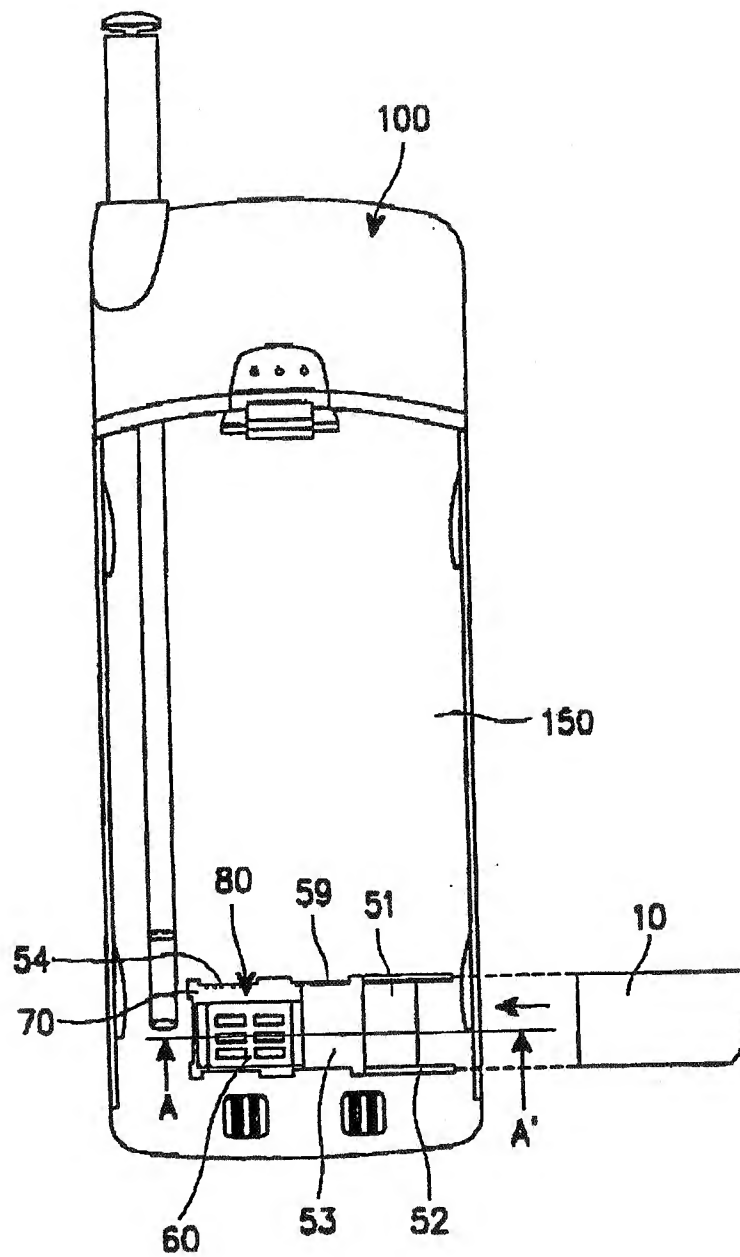


FIG. 3

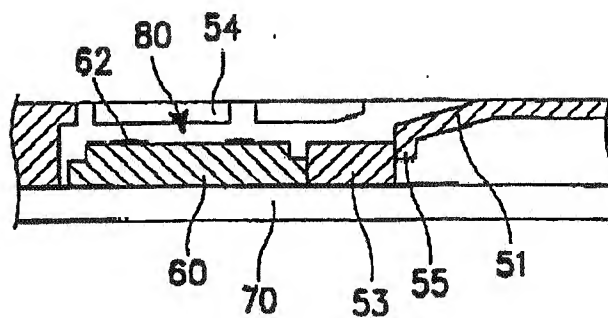


FIG. 4

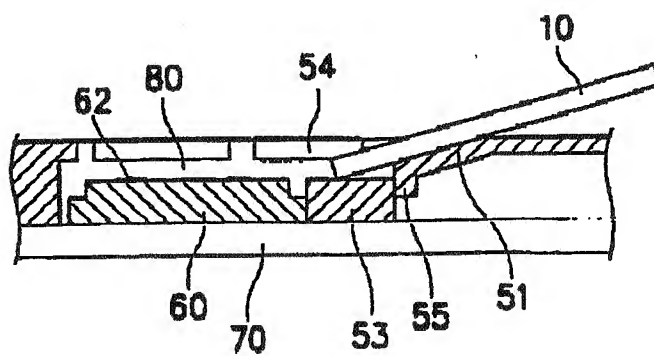


FIG. 5

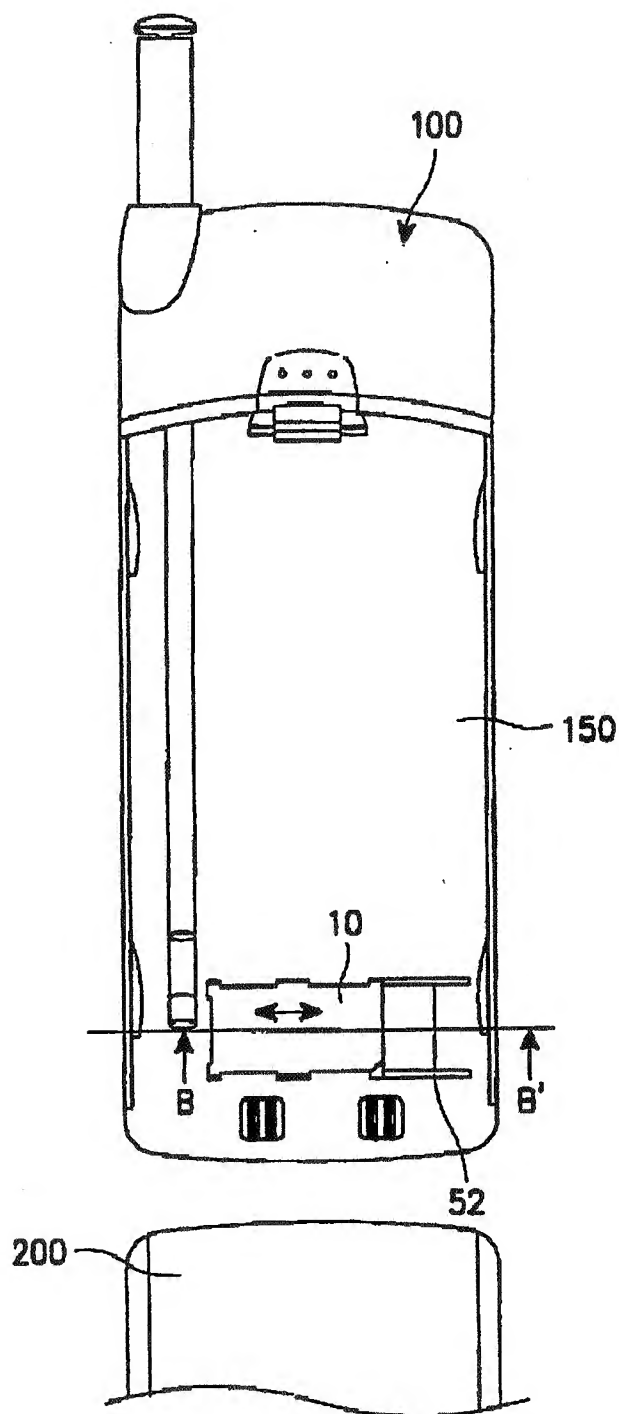


FIG. 6

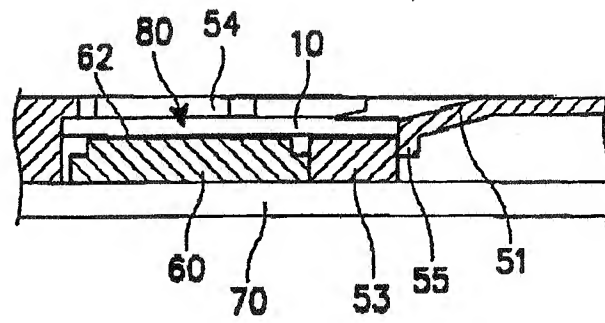


FIG. 7

SIM CARD LOCKING IN A PORTABLE TELEPHONEBACKGROUND TO THE INVENTION

- 5 The present invention relates to a portable telephone and in particular to the locking of SIM (Subscriber Identification Module) cards containing subscriber information in a portable telephone.
- 10 The major digital cellular systems are GSM (Global System for Mobile communication), a European TDMA (Time Division Multiple Access) system, North American-TDMA (NA-TDMA) and CDMA (Code Division Multiple Access). A GSM portable telephone is provided with a SIM card. GSM is an international standard developed to offer compatibility among
- 15 various network operators and used throughout the European continent. The SIM card for GSM includes almost every piece of information required to operate a portable telephone, that is, subscriber information such as a
- 20 password, a telephone number and network-associated information.

FIG. 1 is a plan view of the rear cover of a conventional portable telephone having a SIM card and FIG. 2 is a

25 perspective view of the SIM card being locked in the portable telephone.

In the prior art, a SIM card locking device is located in the rear cover of the GSM portable telephone, as shown in

30 FIGS. 1 and 2. The conventional SIM card locking device is composed of a holder base 25 at a predetermined depth in the lower portion of the rear cover 100 and a card holder 30 connected to a side of the holder base 25 by a

holder hinge 35 and having a card slot 20. Rails are formed in the card slot 20 to receive a SIM card 10.

The SIM card 10 is locked in the conventional SIM card locking device as follows. The card slot 20 and the card holder 30 are raised upward with respect to the holder hinge 35 by pulling up an end portion of the card slot 20. Then, the SIM card 10 is inserted along the rails in the card slot 20 and secured over the holder base 25 by pressing the card holder 30 and the card slot 20 downward.

As shown in FIG. 1, after the SIM card 10 is locked in the rear cover 100 of the portable telephone, a battery pack 200 is attached on the rear cover 100. That is, the battery pack 200 is slid onto a battery pack base 150 of the rear cover 100 to cover the SIM card locking device and protect the SIM card 10 from the external environment.

20

However, locking the SIM card 10 in the portable telephone in this way requires many components such as the card holder 30 and the card slot 20 on the rear cover 100. These components occupy a large area of the rear cover 100, reducing the area available for other parts and make it difficult to insert and detach the SIM card 10 in and from the portable telephone.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a SIM card locking device in a portable telephone, which obvi-

ates the need for extra components by using a structure integrated with the rear cover of the portable telephone and occupies a small area of the rear cover to relatively increase an area for other parts.

5

Accordingly, the present invention provides a portable telephone comprising:

a housing having formed in it a SIM card-receiving recess;

10 means for guiding the SIM card as it is inserted in the recess from one end;

a SIM block adjacent to the recess for electrically contacting the SIM card once inserted; and

15 a resiliently deformable latch so positioned adjacent to the said one end of the recess that insertion of the SIM card requires deformation of the latch, but the latch is free to return to its rest position once the SIM card has been inserted, to retain the SIM card in the recess.

20

Preferably, the means for guiding the SIM card comprises a plurality of mounting guide rails protruding from the sides of the recess.

25 The SIM block may be mounted on a PCB. The telephone may further comprise a mounting protrusion formed on the PCB, to one side of and to the same height as the SIM block.

Preferably, the latch comprises an inclined portion,
30 extending from one side of the housing and inclined towards the recess and a protrusion which protrudes

inwardly from the free end of the inclined portion. The telephone may further comprise insertion guide rails formed on either side of the inclined portion and extending from the said one side of the housing.

5

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will now be described by way of example with reference to the accompanying drawings in which:

10 FIG. 1 is a plan view of the rear cover of a conventional portable telephone having a SIM card inserted;

 FIG. 2 is a perspective view of the SIM card being inserted into the conventional portable telephone;

 FIG. 3 is a plan view of the rear cover of a portable telephone having a SIM card locking device for
15 locking a SIM card according to the present invention;

 FIG. 4 is a sectional view of the SIM card locking device of FIG. 3, taken along line A-A';

 FIG. 5 is a sectional view of the SIM card locking
20 device of FIG. 3 into which the SIM card is being inserted, taken along line A-A';

 FIG. 6 is a plan view of the rear cover of the portable telephone having the SIM card locking device into which the SIM card has been inserted according to the
25 present invention; and

 FIG. 7 is a sectional view of the SIM card locking device shown in FIG. 6, taken along line B-B'.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

30 As shown in FIGs. 3 and 4, a SIM hole 80 is formed as a rectangle to a predetermined depth in the lower portion

of the rear cover 100 of the portable telephone. A plurality of mounting guide rails 54 protrude toward the centre of the SIM hole 80 from three sides. A PCB 70 is disposed under the SIM hole 80 and has a SIM block 60 attached to it. A mounting protrusion 53 is positioned at one side of the SIM block 60 on the PCB 70 with the same height as that of the SIM block 60. An inclined portion 51 of a latch is positioned adjacent to the mounting protrusion 53, extending from one side of the rear cover 100, is inclined toward the SIM hole 80 and has a protrusion 55 protruded downward from its end portion. Insertion guide rails 52 are formed on the upper and lower sides of the inclined portion 51, extending from the side of the rear cover 100. As shown in FIG. 4, a plurality of terminals 62 protrude from the upper surface of the SIM block 60 and a mounting guide rail 54 adjacent to the inclined portion 51 has a lower surface inclined at a predetermined angle.

As shown in FIG. 5, to lock the SIM card 10 into the SIM hole 80 in the lower portion of the rear cover 100, a portion of the SIM card 10 is first inserted along the insertion guide rails 52, as shown in FIG. 5. Then, that portion of the SIM card 10 slides downward by the tension of the inclined portion 51 and passes between the mounting guide rail 54, of which the lower surface is inclined at the predetermined angle and the mounting protrusion 53.

As shown in FIGs. 6 and 7, the SIM card 10 is secured on the SIM block 60 and the mounting protrusion 53 along the

guide rails 54 in the SIM hole 80, with one side and the upper surface of the SIM card 10 supported by the protrusion 55 and the guide rails 54, respectively. Then, the battery pack 200 is slid onto the battery pack base 150 of the rear cover 100 to cover the SIM card locking device and protect the SIM card 10. As shown in FIG. 7, the SIM card 10 is electrically connected to the plurality of terminals 62 on the SIM block 60 and provides its information to the PCB 70 through the SIM block 60 when the portable telephone operates.

For detachment of the SIM card 10, the upper surface of the SIM card 10 is pushed in the direction opposite to that of its insertion while the inclined portion 51 is pressed downward. Thus, the SIM card 10 is removed along the insertion guide rails 52.

As described above, this SIM card locking device can reduce the area dedicated to SIM card insertion, relatively increasing the area available for other parts. It locks the SIM card by use of a structure integrated with the rear cover of the portable telephone, instead of additional components like a holder, thus reducing manufacturing processes and allowing the user easily to insert/remove the SIM card.

CLAIMS

1. A portable telephone comprising:
a housing having formed in it a SIM card-receiving
5 recess;
means for guiding the SIM card as it is inserted in
the recess from one end;
a SIM block adjacent to the recess for electrically
contacting the SIM card once inserted; and
10 a resiliently deformable latch so positioned adjacent to the said one end of the recess that insertion of the SIM card requires deformation of the latch, but the latch is free to return to its rest position once the SIM card has been inserted, to retain the SIM card in the
15 recess.
2. A telephone according to claim 1 in which the means for guiding the SIM card comprises a plurality of mounting guide rails protruding from the sides of the recess.
20
3. A telephone according to claim 1 or claim 2 in which the SIM block is mounted on a PCB.
4. A telephone according to claim 3, further comprising
25 a mounting protrusion formed on the PCB, to one side of and to the same height as the SIM block.
5. A telephone according to any preceding claim in which the latch comprises an inclined portion, extending
30 from one side of the housing and inclined towards the recess and a protrusion which protrudes inwardly from the

free end of the inclined portion.

6. A telephone according to claim 5, further comprising
insertion guide rails formed on either side of the in-
5 clined portion and extending from the said one side of
the housing.

7. A portable telephone substantially as described
herein with reference to FIGs. 3 et seq. of the accompa-
10 nying drawings.



The
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Office
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Application No: GB 9818784.2
Claims searched: 1 to 7

Examiner: John Donaldson
Date of search: 14 September 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK CI (Ed.P): G4M(MBA)
Int CI (Ed.6): G06K 7/00, 7/01, 7/04, 7/06, 7/08, 7/10, 7/12, 7/14, 13/00, 13/02,
13/04, 13/06, 17/00
Other: Online:WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2258748 A (HALPERN), see page 3, line 25 to page 4, line 18	1 to 3, 5

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.